CONSTRUCTION AND DEVELOPMENT

LONG-TERM GOAL (15-YEAR)

The goal of Virginia's construction and development related nonpoint source pollution programs is to continually evaluate and improve the implementation of existing laws, regulations and conservation engineering practices, developed to provide the framework for comprehensive environmental protection and preservation of the economic integrity of both on-site and off-site properties and resources. Increases in construction and development activities , as well as an increased awareness of both the environmental and economic impacts of those activities, has resulted in the need for more effective implementation of the current laws, regulations and practices. Effective implementation of construction and development related nonpoint source pollution programs has been clearly identified as a statewide priority for these programs. The following three broadly stated goals summarize implementation strategies presented within this chapter.

1. Expand and increase educational efforts to all citizens of the commonwealth including state and local government personnel, concerned citizens, property owners, developers, consultants, and contractors

2. Expand and increase educational materials and programs to include construction and development related data which correlate a clear relationship between stewardship of the environment and the economic vitality of Virginia's land and water resources

3. Improve the efficiency, the effectiveness and the equitable execution of current laws and regulations

INTRODUCTION

The conversion of land surface from undeveloped open and woodland space to an urbanized setting complete with housing, commercial and transportation infrastructure, causes a significant change in the surface runoff hydrology and eliminates opportunities for infiltration and flow attenuation. This developed condition increases the volume and peak flow rate of runoff from rainfall. During the construction process excess runoff can become laden with sediment and nutrients, which are then deposited in downstream channels, sinkholes and streams. The post-construction, or developed condition increase in runoff can cause severe accelerated erosion of stream channel beds and banks, depositing additional sediment and nutrients in the downstream systems, as well as destroying the various habitats found within the stream channel. The urbanized landscape also collects and stores various urban pollutants such as sediments, nutrients and toxics on impervious surfaces. During storm events these deposited pollutants are quickly and easily flushed from impervious surfaces resulting in potentially high concentrations of pollutant laden runoff. Finally, the urbanizing landscape typically contains an increasing number of privately owned on-site sewage disposal systems which, over time, may release pathogens to the surface runoff.

AGENCY ROLES & RESPONSIBILITIES

Virginia Department of Conservation and Recreation

The Department of Conservation and Recreation (DCR) is the lead agency in implementing Virginia's management plan for nonpoint source pollution (NPS) control, and as such, administers the following programs for construction and development related activities:

Erosion and Sediment Control Program: The Virginia Erosion and Sediment Control (ESC) Law and Regulations, and the Erosion and Sediment Control Certification Regulations are administered under the authority of the Virginia Soil and Water Conservation Board. The law requires that every county, city and incorporated town adopt a local ESC ordinance or program consistent with the regulations. Further, the local government personnel must become certified through the DCR Erosion and Sediment Control Certification program. Additionally, DCR is the state's ESC chief program administrator and plan approving authority for state agencies participating in regulated land-disturbing activities as well as utility and rail companies that submit annual specifications to the DCR. The law requires that state agencies responsible for land-disturbing activity ensure compliance with the approved plan or specifications.

Stormwater Management Program: The DCR also administers the Virginia Stormwater Management Law (SWM) and regulations. The law enables every county, city and incorporated town to adopt a local SWM ordinance or program consistent with the regulations. Additionally, DCR functions as the state's SWM chief program administrator and plan approving authority for state agencies participating in regulated land-disturbing activities. The law requires that state agencies responsible for land-disturbing activity ensure compliance with the approved plan or specifications.

Both the SWM and ESC programs contain the same four components. These four components are administration, project inspection, plan submittal - review - approval, and enforcement. While DCR has the ultimate responsibility for assuring equitable, efficient and effective enforcement of both the ESC and SWM programs, each law delegates implementation responsibilities to three distinctly different jurisdictional entities: (1) locally adopted ESC or SWM programs, (2) state agencies, and (3) utility and rail companies. These jurisdictional separations are designed to develop systems of accountability for ensuring compliance with both the ESC and SWM laws while taking into account the vastly different construction practices and environmental complexities that are specific to each. Locally adopted programs implement all four components while DCR implements the plan (and annual

plan and specifications) review - approval process and all enforcement responsibilities for state agencies and utility and rail companies. Hence, DCR's primary role in successful statewide implementation of these programs is to ensure that these three separate entities are effective and consistent in their implementation of the state's regulations and minimum standards, and that equitable enforcement measures are applied.

Floodplain Management Program: DCR administers the Virginia Flood Hazard Reduction Act. The Floodplain Management staff provides leadership, training and technical assistance to local governments in the implementation of the National Flood Insurance Program (NFIP) and the Community Rating System (CRS). In addition DCR staff assists in the development and implementation of Flood Hazard Mitigation Plans.

Shoreline Erosion Advisory Service: DCR implements the Virginia Shoreline Erosion Advisory Service (SEAS). This program, enacted in 1980, promotes environmentally acceptable shoreline and riverbank erosion measures to protect property and reduce sediment and nutrient loads to the Chesapeake Bay and other waters of the commonwealth. The primary function of the SEAS program is providing technical advice to prevent and correct shoreline erosion problems to landowners, local governments and environmental agencies.

DCR sponsors the Karst Groundwater Program in a 33-county region underlain by cavernous and/or mined-out bedrock. This mountainous area is rich in natural biodiversity, and drains into the headwaters of many of our major river basins. The karst program offers technical and grant-writing assistance to individuals, community and school groups, soil and water conservation districts, and businesses in western Virginia. Projects involve surface and groundwater monitoring, biological inventories, public education, conservation planning, and BMP implementation. By working through the State Environmental Review Process (SERP), DCR reviews and comments on major construction projects proposed near Natural Area Preserves, caves, and other conservation sites. Information about the collapse and subsidence history of karst areas is provided, if known, and technical assistance with site-specific karst issues offered

The Department of Environmental Quality

Environmental Impact Review: The Department of Environmental Quality (DEQ) Office of Environmental Impact Review coordinates the state's responses to environmental documents for proposed state and federal projects. The environmental impact review staff distributes documents to appropriate state agencies, planning districts and localities for their review and comment. Upon consideration of all comments, the staff prepares a single state response which typically identifies various programs and regulations which require compliance.

Virginia Pollution Discharge Elimination System Permit: DEQ is responsible for administering the National Pollutant Discharge Elimination System (NPDES) Program in Virginia. The permits issued through this program are known as Virginia Pollutant Discharge Elimination System (VPDES) permits. These permits address both point and nonpoint source pollution discharges into waters of the commonwealth. Nonpoint source pollution is addressed through DEQ's requirement for a VPDES permit of owners/operators of Municipal Separate Storm Sewer Systems (MS4s) (this includes municipalities that meet certain population thresholds) and certain industries, which are categorized as having potentially pollutant laden stormwater discharges. One such industrial category is that of construction activities which disturb five acres of land area or more.

Virginia Water Protection Permits: Any project that requires federal permits for discharge of dredge material or fill in a waterway or wetland (Clean Water Act, Section 404), work or construction in a navigable waterway (Rivers and Harbors Act, Section 10), or a water withdrawal is reviewed by DEQ for issuance of a Virginia Water Protection (VWP) Permit. Federal permits must comply with the VWP permitting program (as authorized by the CWA Section 401).

Chesapeake Bay Local Assistance Department

The Chesapeake Bay Local Assistance Department (CBLAD) administers the Chesapeake Bay Preservation Act (CBPA) and Regulations. The CBPA is designed to improve water quality in the Chesapeake Bay and its tributaries by requiring wise resource management practices through zoning, comprehensive planning, and ordinances establishing protected areas and defining

specific water quality protection measures. The CBPA expands local government authority to manage water quality and establishes a detailed relationship between water quality protection and local land use decision-making. The CBPA designates a state program, administered by CBLAD and implemented by local governments in Tidewater, Virginia (Tidewater as defined within the CBPA). Local governments outside the Tidewater area are enabled to adopt similar zoning, planning and resource protection ordinances.

Virginia Department of Transportation

The Virginia Department of Transportation compliance with the ESC regulations begins with the project planning. The project design takes into consideration the site topography, soils, drainage patterns and natural vegetation of the site. Project plans incorporate erosion and sediment controls to prevent excessive on-site damage and off-site runoff. Disturbed areas are stabilized after final grade has been attained. Projects are monitored daily by project inspectors and routinely by district environmental monitors, who are certified by DCR as erosion and sediment control inspectors. An Environmental monitor is located in each of VDOT's nine construction districts and an erosion and Sediment Control program manager, who is certified by DCR as a program administrator, is located in VDOT's central office.

Virginia Department of Health

The Virginia Department of Health (VDH) is responsible for protecting public health and to ensure that all sewage is disposed of in a safe and sanitary manner.

On-site Sewage Disposal Program: VDH regulates the construction, operation, expansion and modification of on-site sewage disposal systems. VDH also requires the correction of failing on-site disposal systems.

Department of Game and Inland Fisheries

The Department of Game and Inland Fisheries (DGIF) provides environmental analysis of projects or permit applications submitted or coordinated through the Virginia Department of Environmental Quality (DEQ), the Virginia Department of Transportation (VDOT), the Virginia Marine Resources Commission (VMRC), the Virginia Department of Mines, Minerals and Energy (DMME), the U.S. Army Corps of Engineers (ACOE, Corps), the Federal Energy Regulatory Commission (FERC), and other state or federal agencies. In many cases, environmental reviews are conducted for several agencies simultaneously, since jurisdictions of state and federal agencies often overlap. DGIF's role in these procedures is to determine likely impacts of proposed projects upon fish and wildlife resources and habitats; to evaluate alternatives to the proposed project; and to recommend appropriate measures to avoid, reduce, or mitigate for those impacts. In conducting these reviews, potential impacts from NPS are addressed.

All State Agencies

All state agencies are required to comply with the ESC and SWM program requirements, as well as local CBPA ordinance requirements.

Local Governments

Local governments implement the ESC program as well as other state mandated programs such as VPDES, CBPA and the voluntary SWM program.

Planning District Commissions

Planning District Commissions (PDCs) were organized to promote the orderly and efficient development of the physical environment by encouraging and assisting governmental subdivisions to plan for the future. PDCs are involved in assisting local governments to comply with NPS pollution regulations such as ESC, SWM, CBPA, etc., and recommending improved implementation procedures.

Soil and Water Conservation Districts

Local soil and water conservation districts (SWCDs) provide advisory assistance and promote local government compliance with ESC control, SWM, CBPA and other NPS pollution program requirements. In some cases, the SWCD provides plan review and approval functions for the local government.

Virginia Cooperative Extension

The Virginia Cooperative Extension (VCE) provides educational programs to citizens regarding land use and water quality issues. Specifically, VCE develops and implements educational programs for home gardeners and professionals in horticulture and landscaping industries regarding techniques to minimize pollution from nutrients, pesticides and soil erosion resulting from commercial, private and governmental landscape installations, horticultural businesses and related activities.

ISSUE IDENTIFICATION & PROGRAM ASSESSMENT

The interagency Construction and Development workgroup, identified four source subcategories as being the major NPS pollutant concerns related to construction and development activities. These four source subcategories and respective pollutant categories are summarized in the table below and later described in detail with accompanying strategies to improve reductions in pollutant loads.

SOURCE CATEGORIES

SOURCE CATEGORY	POLLUTANT CATEGORY			
	SEDIMENT	NUTRIENTS	TOXICS	PATHOGENS
Erosion and sediment from construction sites	**T**	**T**		
Stream channel erosion due to increased volume and rates of flow resulting from increased impervious cover	**T**	**T**		
Nonpoint source pollution from new and existing developed surfaces	**T**	**T**	**T**	**T**
Increases in new and failing on-site sewage disposal systems		**T**		**T**

1. Erosion and Sediment Control on Construction Sites

The urbanization process begins with construction activities that disturb stabilized ground surfaces and expose highly erodible fine grained subsoils to wind and rain erosion. Soil particles, along with bounded nutrients and other pollutants, can create significant particulate and soluble pollutant loads discharged through stormwater runoff into surface and ground water.

NPS Pollution Control Programs:

DCR Erosion and Sediment Control Program: The Virginia Erosion and Sediment Control (ESC) Law requires that any person commencing a land-disturbing activity larger than the minimum threshold of 10,000 square feet, except activities exempt from the law, are required to submit an erosion and sediment control plan for review and approval prior to such activities. Local governments are authorized to implement a threshold of less than 10,000 square feet for land-disturbing activity.

Once the plan is approved, it is the responsibility of the owner to ensure its implementation.

The ESC law mandates local governments with administration, plan submittal - review - approval, project inspection, and enforcement responsibilities on private and municipal development projects. The ESC law mandates DCR with the responsibility of overseeing local government programs. This oversight responsibility includes an evaluation of the consistency of local government implementation with minimum standards of effectiveness as required by the regulations. DCR is also mandated to inspect and enforce state agency and utility company annual plan projects. In addition, DCR is authorized to act on behalf of a local program or an aggrieved citizen in pursuing enforcement actions against a violator. DCR has developed and maintains an Erosion and Sediment Control Handbook (latest edition - 1992), which contains conservation standards to guide in the development and implementation of ESC plans.

Code reference:
Erosion and Sediment Control Law -§10.1-560 et seq; *Code of Virginia*; Erosion and Sediment Control Regulations 4VAC50-30; Erosion and Sediment Control Certification Regulations 4VAC50-50.

DEQ Virginia Pollution Discharge Elimination System Permit (VPDES) for Construction Activities: DEQ requires a VPDES permit for certain industries that potentially contribute pollutants to stormwater runoff. Construction activities that disturb five acres or more (with the possible reduction of the permit threshold to one acre of disturbance) are considered to be such an industry, and therefore are required by law to obtain a VPDES permit.

The conditions of this permit generally require that a pollution prevention plan be designed and implemented to prevent contaminated runoff from leaving the construction site.

Code reference: Virginia Pollution Discharge Elimination System Permit Regulation - §62.1-44.15 et seq; *Code of Virginia*; Virginia Pollution Discharge Elimination System 9VAC25-30.

CBLAD CBPA Regulations: The CBPA requires local governments in Tidewater, Virginia to designate Chesapeake Bay Preservation Areas and adopt a land management program based on the Chesapeake Bay Preservation Areas Designation and Management Regulations. Chesapeake Bay Preservation areas include Resource Protection Areas (RPAs) and Resource Management Areas (RMAs). Sensitive features such as tributary streams, shorelines and many wetlands are included in RPAs along with a 100 foot buffer adjacent to these features. The buffer is deemed to achieve a 75 percent reduction in sediments. RMAs are designated contiguous to the entire inland boundary of the RPA, and in many localities include the entire jurisdiction. Within Chesapeake Bay Preservation Areas, the threshold for ESC requirements is lowered from 10,000 to 2,500 square feet of land disturbance. In addition, there are requirements for no-net increase in stormwater pollutant loadings from new development and a 10 percent reduction in stormwater loadings from redevelopment. These requirements can be met through on-site best management practices or through an approved regional stormwater management program. The regulations also require that the site design criteria of minimizing land disturbance and impervious cover, and preserving existing vegetation, be incorporated into the local development review process.

The CBPA regulations contain performance standards which afford additional protection against erosion and sedimentation damage control by minimizing land disturbance and preserving existing vegetation. Additional performance standards associated with replanting and revegetation requirements provide long-term soil stabilization benefits.

Code Reference: Chesapeake Bay Preservation Act - §10.1-2100 et seq; *Code of Virginia*; Chesapeake Bay Preservation Area Regulations 9VAC10-20

Issue Identification and Description:

A. Local government adopted programs are inconsistent with the state Erosion and Sediment Control program's minimum standards of effectiveness.

There are 166 local government adopted Erosion and Sediment Control programs within the commonwealth which includes towns, cities, and counties. During 1998, approximately 75 per cent of these local ESC programs were considered to be inconsistent with the minimum standards of effectiveness as established by the Virginia Erosion and Sediment Control Law and

Regulations. In 1992, the local program inconsistency level was approximately the same.

Through an evaluation of historical information regarding local program implementation and DCR services to local governments, the following items were determined to be major contributors towards local program inconsistencies:

- since 1990, extensive changes to the ESC law have had comprehensive impacts to the administration of both the state and local ESC programs. While these changes in the law and regulations have resulted in necessary increases in the authority and in the educational requirements of personnel working within the statewide ESC program, the actual implementation of these changes to the law have not evolved into improvements in the statewide program;

- lack of state agency and local staffing resources and the broad array of expertise needed in order to meet all mandated responsibilities;

- limited understanding of the economic costs and benefits of administering both state and local ESC programs;

- limited understanding of the environmental costs and benefits of administering both state and local ESC programs; and,

- limited information and data on urbanization impacts which would be used to effectively prepare the state and local programs to make necessary improvements in respective ESC programs.

In addition, upon evaluation of urban growth trends within the commonwealth and the related potential for costly economic and environmental impacts of an unsuccessfully implemented ESC program, the resources allocated to the statewide ESC program are significantly less than that dedicated to other resource protection programs.

In summary, limitations of successful local ESC programs appear to be derived from the lack of information which adequately quantifies the costs of all program services rendered and the correlating recovery of these costs from plan review, inspection and permit fees as by the ESC law. Therefore, tremendous efforts are needed by the state program in order to provide this integral administrative guidance. Administrative guidance would clearly identify the environmental and economic benefits of an effective (and appropriately funded) ESC program to the general public. Additionally, provision of environmental and economic data would foster greater support for the need of effective program implementation and, therefore, become a local priority.

B. State agencies are non-compliant with the state Erosion and Sediment Control program's minimum standards of effectiveness.

The ESC Law and Regulations mandate state agencies to ensure compliance on the projects they are responsible for. This provision of the law and other provisions that remove state agencies from plan review, inspection and enforcement jurisdiction of local governments, requires state agencies to take a leadership role in the successful implementation of the state's ESC program in order for the law to be equitably applied to all citizens of the commonwealth. However, historical and current compliance rates indicate that regulated state agency projects do not reflect success in attaining this leadership role. In addition, if the leadership role in compliance with the ESC law was attained by state agencies, DCR staff's primary workload would be dedicated to local government and citizen support, which is the full intent of the law and DCR's mission.

However, as indicated previously, the ESC law dictates state program responsibilities which, based on the number and complexity of state agency projects, require 70 per cent of DCR ESC staff's estimated annual workload to be dedicated solely to state agency projects. This workload imbalance on state agency projects and concurrent compliance rate has helped identify a number of initiatives (presented as strategies below), some of which have already been implemented. These strategies will allow for state agencies to incorporate a much more comprehensive system of accountability, similar to that of local governments and, therefore, enable them to successfully attain a leadership role in the implementation of the ESC program.

C. Consistent enforcement of ESC requirements on active private and state agency projects

A historic assessment of enforcement activities and the resulting remediation or abatement efforts does not reflect consistent and effective enforcement of the state law and regulations on public and private development projects. A review of the available compliance and consistency data for calendar year 1998 indicates that most ESC jurisdictional authorities were identified as having major deficiencies in carrying out effective enforcement of the ESC Law and Regulations. Legal resources, enforcement education, program prioritization and staffing resources were identified as major contributors to the ineffective execution of the ESC enforcement procedures.

Enforcement procedures must follow a formula of due process in order to ensure fair judgement and mitigation. Enforcement procedures defined within the law are specific in terms of actions and authority, as well as the time frames in which those actions should occur. However, detailed enforcement guidelines that clearly identify efficient and effective enforcement procedures do not exist. As a result, the majority of local governments do not exercise their full authority as delegated by the ESC Law and Regulations including the locally adopted ordinance. Additionally, state agencies do not exercise their full authority provided them by the ESC Law and Regulations. In contrast, however, some local governments have adopted "Enforcement Guidelines" that utilize fines and penalties as enforcement tools. Executing such guidelines has proven very successful in demonstrating that effective enforcement leads to effective implementation.

D. Data collection and analysis of land use trends and urban nonpoint source program indicators for the purpose of supporting local program and state agency ESC initiatives

Trends in land use, development activity, disturbed acreage, water quality monitoring, and erosion control costs and efficiencies can be very effective in developing a comprehensive assessment of the statewide ESC program. Data collection efforts at the state and federal level do not typically correlate into local program support documentation. This information can be used to support immediate needs for appropriate resources and local program prioritization. Most importantly, compiling such data and returning it to local governments in a local watershed format would enable localities to better assess and prioritize local environmental and economic trends and needs.

E. Improved coordination of resources among state agencies with responsibilities for oversight of land disturbing activities

DCR, DEQ and CBLAD all have a role in the land disturbing and conversion process at both state and local levels. Various local government oversight responsibilities, as well as permit requirements, can and should be coordinated in a more effective fashion with the goal of more effective implementation and enforcement.

F. Education of citizens, contractors, consultants, land developers, land managers, and local and state government officials on the environmental and economic impacts of damage resulting from sedimentation, and the legal requirements of the state's ESC program

The ESC training courses are not designed to educate the general public. Rather, the primary focus of the training is local government implementation of ESC programs. Citizens whose property has been adversely affected from non-compliant projects, or citizens who are aware of inequitable and/or ineffective enforcement of the state's laws have not had access to educational opportunities on abatement and appropriate enforcement actions and responsibilities required by the law. In general, there are no educational programs available to the diverse range of stakeholders affected by ESC management and program implementation.

The karst groundwater program and Project Underground have distributed brochures and other information about the importance of recognizing karst features, proper site investigation and planning, control of runoff, erosion, and sedimentation, and stormwater management during construction in karst areas. A new brochure on E&S in Karstlands will be developed in 2000. Several local and regional karst workshops have been held with the SWCDs and PDCs targeted at engineers, contractors, local officials, and developers. DCR staff routinely addresses county planning commissions and Boards of Supervisors on karst issues.

G. Roadside ditch maintenance policies and procedures should be established to guide local and state maintenance operations in an environmentally sound, economically achievable, and effective manner

Rural roadside ditches tend to be a collection and conveyance system for relatively clean water from undeveloped or open space areas. In order to keep these rural roads safe, these ditches must be maintained and kept free of debris, vegetation and even sediment. Unfortunately the nature of many rural, and even urban roads and associated right-of-ways, reduces or eliminates the opportunity to expand or improve these ditches so as to allow for non-erosive conveyance and maintenance. Therefore, these ditches can often become sources of sediment to receiving streams.

H. Improvements and revisions are needed in existing baseline soils' properties data as related to surface and groundwater hydrology characteristics altered from their natural conditions at the commencement of construction activities

Current erosion and sediment control plan requirements include using of site-specific soils data to calculate potential erodibility characteristics and alterations to surface and groundwater hydrology that occurs from the commencement of construction activities through their completion. However, a limited number of modernized soil surveys have been published; in some cases even initial soil surveys have not been compiled and published. The soil survey information is critical to developing an adequate plan that reflects project site conditions and concerns. The soil survey also provides tremendous economic benefits as a planning tool for designers to estimate the stability of onsite soils and whether offsite materials will be necessary for project demands.

There is also an identified need for the maintenance of an up-to-date Erosion and Sediment Control Handbook that incorporates accurate soils information, improved conservation technologies, changes/improvements in engineering and materials standards, changes/improvements of the ESC Law and Regulations, and numerous other program educational needs and demands.

Relative to the information provided in a soil survey, soils engineering properties provided in soil surveys are derived from agricultural plots that do not necessarily correlate to construction site plots/activities. There is an identified long-term need for improvement of baseline soils data that accurately reflect conditions of the developed landscape in order to design the appropriate conservation engineering practices. The improved soils data will also more accurately estimate potentially adverse impacts onsite and offsite of inappropriately designed and/or installed practices.

2. Stream Channel Erosion Due to Increased Volume and Rates of Flow Resulting From Changes in Land Use

The post-construction land surface condition includes a patchwork of impervious surfaces and improved stormwater conveyance systems. The combination of impervious surfaces and efficient conveyance of the runoff from these surfaces causes an increase in the volume, velocity, peak rate and frequency of bankfull discharges to receiving channels and streams, causing significant erosion of the natural stream systems. This erosion destroys stream channel habitat, smothers the very delicate micro-invertebrate benthic community within the channel and deposits the eroded soil and associated nutrients in downstream rivers, lakes, and tidal estuaries. Smaller soil particles may tend to remain suspended in the water column and block sunlight from reaching bottom vegetation, thus interrupting a vital link in the aquatic food chain.

NPS Pollution Control Programs:

DCR Erosion and Sediment Control Program: DCR'S ESC regulations require that receiving waterways and properties downstream of any land development project be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff. The regulations contain minimum provisions for the determination of adequacy of channels downstream of development projects. The lack of an adequate channel requires the implementation of either an alternative site design, channel improvements, detention, or a combination of such acceptable to the plan approving authority (local government, SWCD, or DCR).

Code reference:
Erosion and Sediment Control Law -§10.1-560 et seq; *Code of Virginia*; Erosion and Sediment Control Regulations 4VAC50-30; Erosion and Sediment Control Certification Regulations 4VAC50-50.

DCR Stormwater Management Program: The DCR SWM program contains a stream channel erosion component. It allows local governments to adopt various minimum technical criteria as well as a more comprehensive approach, which includes alternate criteria based on site specific stream channel morphology and other factors. The SWM Law acknowledges the stormwater management provisions promulgated pursuant to the ESC law by also requiring that receiving waterways and properties downstream of any land development project be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff. The SWM Law expands these provisions by incorporating local enabling authority for all of the facets of permanent SWM facility design, maintenance and inspections, as well as enforcement. In addition, the SWM Law creates flexibility to identify and address stream channel erosion issues on a watershed scale.

Code reference:
Stormwater Management Law-§10.1-603 et seq; *Code of Virginia*, Stormwater Management Regulations 4VAC3-20.

DEQ VPDES Municipal Separate Storm Sewer System (MS4) Permit: Municipalities meeting certain population criteria are required to implement a stormwater pollution prevention plan that reduces pollutants in runoff to the maximum extent practicable, identifies and eliminates illicit discharges to storm sewer systems, incorporates monitoring runoff, and a stormwater education program. Generally this plan includes a SWM ordinance that addresses increased rates of stormwater runoff and the NPS pollution associated with that runoff.

Code reference: Virginia Pollution Discharge Elimination System Permit Regulation - §62.1-44.15 et seq; *Code of Virginia*; Virginia Pollution Discharge Elimination System 9VAC25-30.

CBLAD CBPA Regulations: The points of emphasis within the CBPA regulations are the minimization of disturbed area and impervious cover, the preservation of existing vegetation and the preservation of buffer areas designated as Resource Protection Areas (RPAs). These goals are compatible with efforts to minimize stream channel erosion since they typically result in reduced stormwater discharges associated with development. RPAs are generally adjacent to stream channels and wetlands. Preservation of these buffers will help maintain the soil stabilization properties of the adjacent vegetation. In addition, the CBPA regulations require Tidewater localities to lower the threshold for the requirement of an erosion and sediment control plan from a disturbance of 10,000 square feet to 2,500 square feet. This helps implement a stream channel erosion component for a greater number of development projects. Further, CBPA regulations require that the impact of increases in stormwater runoff are identified and addressed. Some locally adopted programs are employing stream restoration and protection as water quality.

Code Reference: Chesapeake Bay Preservation Act - §10.1-2100 et seq; *Code of Virginia*; Chesapeake Bay Preservation Area Regulations 9VAC10-20

The Karst Groundwater Program is studying the effectiveness of stormwater management practices in karst terrain, and is reviewing designs intended to prevent subsidence and collapses related to SWM in karst areas.

Issue Identification and Description:

A. Lack of a state wide mandate for local comprehensive stormwater management programs

The *Code of Virginia* enables local governments to adopt a comprehensive stormwater management program. The law allows that if a local government chooses to adopt a local program, then that program must be consistent with the minimum administrative and technical criteria found in the SWM Law and Regulations. Local governments, for the most part have chosen not to adopt a SWM program, choosing instead to rely on the stormwater provisions authorized by the ESC Law and Regulations. Unfortunately, this practice does not provide local governments with full enabling authority to address the management of stormwater runoff and remediation efforts in a comprehensive manner.

B. Develop statewide regulatory criteria that

provides for effective prevention and minimization of stream channel degradation resulting from land development and land conversion activities

The stream channel erosion component of the state ESC and SWM programs require that "downstream properties be protected from damages due to increases in volume, velocity and peak rates of flow due to land development activities...". The technical criteria established in the regulations, however, do not consider these distinctly different characteristics of runoff. Rather, the criteria require a simple channel adequacy calculation based on velocity of flow. The regulatory language allows flexibility on the part of the plan approving authority to impose more comprehensive and channel specific criteria, as well as preventive development strategies. However, the interpretation of this criteria by the regulators, as well as the regulated community, has traditionally focused on the simplest solution: detention. This management strategy has proven, in many cases, to unnecessarily concentrate runoff and, due to increases in frequency and duration of peak flows, cause erosion.

C. Provide for more effective implementation of stream channel preservation strategies

The ESC and SWM regulations require that natural stream channel characteristics be preserved to the maximum extent practicable. There are a number of stream channel preservation standards and combinations of standards available, however, in most cases this performance standard is addressed by the stand-alone detention of increased volumes of runoff released at the pre-developed rate. The detention design is the most attractive alternative solution to the developer, as well as the consultant, because detention structures are the most economically practical structures to design and construct. However, when the design fails to achieve the goal of protecting downstream channels, the cost of mitigating off-site damages is not realized during the budgeting of a detention facility. Therefore, a detention structure may appear to be the most economically practical, but is not an appropriate stand-alone channel protection measure for all projects. Widespread use of stand-alone detention facilities on practically all projects in the commonwealth results in costly downstream damages incurred by the developer or, as in most cases, the local government and downstream property owners. There is sufficient evidence of the failure of this approach in historical inspection and complaint records which have revealed severely eroded channels downstream of detention ponds throughout the commonwealth. Even as new and more effective materials and methods (such as the new criteria identified in previous goal) are being developed, the common design of choice remains the standard detention basin.

Chesapeake Bay Preservation Act (CBPA) performance standards require the preservation of stream channels and adjacent buffer areas. In addition, the required minimization of impacts to the land and existing vegetation are effective in promoting proper protection of the existing stream system. These standards are only applied in Tidewater, Virginia, even though local governments outside this area are enabled to adopt similar land and water resource protection ordinances. Clearly, there is a lack of incentive on the part of local governments to adopt such criteria, as well as on the part of the developer to implement these provisions voluntarily.

The cost-benefit to the local government in the form of reduced capital improvement expenditures to restore stream channels or eliminate the channel with a pipe system becomes the primary incentive in effective implementation of stream channel erosion policies. Likewise, developers and engineers must be able to identify costs and project requirements in order to consider new approaches to stream channel protection. Additional economic incentives and/or a better understanding of economic and environmental benefits of stream channel protection will further promote the use of new alternative stream channel protection standards and stream buffer preservation standards.

D. Management and maintenance of aging stormwater management BMP facilities

Many BMPs built for stream channel erosion have been built under the authority of the local ESC program. These facilities are often turned over to homeowners' associations for ownership and maintenance. In most cases, maintenance is not considered in the design of the basin and the homeowners' associations is not trained or equipped financially to perform annual and long-term maintenance. Once a stormwater BMP falls into disrepair the maintenance or repair costs can easily exceed the homeowners' associations' budget. Long-term maintenance agreements executed between the local government and the homeowners' associations may be difficult to enforce due to limitations in the ESC

Law. Stormwater basins in disrepair represent a significant liability to local governments due to the potential for basin failure and downstream damage, safety issues and repair costs.

E. Guidelines to assist in the state and federal permit process where regional stormwater facilities impact wetlands and other environmental resources

Increases in peak rates of runoff from existing developed areas have severely impacted stream channel systems. Many examples exist where the only opportunity to mitigate the impacts of the existing development is through the implementation of a regional BMP. The uncertainty of the various permit and resource protection requirements can often delay, and sometimes defeat, the implementation of a regional solution.

In western Virginia, and even in some parts of the Piedmont, the presence of surface channels is overshadowed by the presence of sinkholes leading to subsurface drainage systems. In many of these karst areas, sinkholes are commonly used as "natural" stormwater management structures for developing areas. The use of sinkholes for any type of wastewater disposal can lead to groundwater contamination, off-site flooding, and aggravated subsidence problems. As natural depressions in the landscape; however, there is often no other alternative than to incorporate sinkholes into the design of stormwater management systems.

When sinkholes are modified to more easily accept drainage, especially for stormwater or liquid waste disposal, they are technically defined as Class V injection wells by the USEPA. Although Virginia has no program to control or track Class V injection wells, Karst Program staff have reviewed guidelines and policies from surrounding states, and distributed information to DCR and the SWCDs. The Program will continue to investigate and help remediate Class V injection wells that create water quality, flooding, and stability problems, and will cooperate with partner agencies to draft a state strategy to properly deal with Class V injection wells.

3. Nonpoint Source Pollution From New and Existing Developed Surfaces

Developed areas, especially impervious surfaces, tend to accumulate sediments, nutrients and possibly toxics. These pollutants are deposited from surface activities, such as urban transportation and service infrastructure, as well as from atmospheric deposition. These pollutants are then readily washed from these impervious surfaces and transported to receiving stream systems during rainfall events. Unstabilized or unmaintained pervious surfaces can also contribute a significant nonpoint source pollution load to stormwater runoff. Managed pervious areas such as lawns, golf courses and cemeteries are managed to maintain a healthy green appearance. A growing number of landscape companies and contractors have created efficient systems for delivering fertilizers and pesticides to the suburban landscape to help land owners maintain a lush green lawn area. In many cases these chemicals are applied with no evaluation or analysis of available nutrients within the soils, nor an understanding of the potential off-site impacts. Excess chemicals not bound by the soil or utilized by lawns/plantings are readily washed off the landscape by rainfall events and/or urban irrigation. Therefore, both on-site and off-site land and water resources may sustain adverse economic and environmental impacts from the excessive and unnecessary application of chemicals.

NPS Pollution Control Programs:

DCR Stormwater Management Program: The SWM law designates DCR as the program authority for implementing the SWM regulations for state agency projects. DCR also has oversight authority for those localities that choose to adopt a SWM program. The SWM Law does not require local governments to adopt a SWM program. If a local government does choose to adopt, they must be consistent with the minimum technical and administrative criteria found in the SWM Law and Regulations. Amendments adopted in 1998 included input from DEQ and CBLAD in order to have one technical standard that satisfies the conditions of all three agency programs.

The technical components of the SWM regulations contain provisions for addressing the quality of stormwater runoff. This provision includes performance-based and technology-based criteria. The performance-based criteria was developed to offer consistency with the CBLAD CBPA regulations, which also contain provisions for the quality of runoff. The performance-based criteria requires that the pollutant

load does not increase from the natural or pre-developed condition. A calculation procedure referred to as the Simple Method is used to calculate the annual phosphorus load associated with impervious covers. The natural or pre-developed load is assumed to be that which is associated with an impervious cover of 16 per cent. Localities are given the option of establishing an existing or pre-developed condition based on actual land cover conditions at the time of program adoption. The calculation procedure yields a pre- and post-developed phosphorus load. The post-developed load must be reduced by implementing a stormwater BMP according to a schedule of BMPs and associated target phosphorus removal efficiencies found in the regulations. In order to achieve the target removal, the BMPs must be designed in accordance with the *Virginia Stormwater Management Handbook, 1999.* The SWM performance-based water quality criteria also address property redevelopment. Redevelopment activities which meet percent impervious cover criteria must achieve a 10 per cent reduction in phosphorus loading.

The technology approach establishes that for any given development of a specific drainage area size and percent of impervious cover, there is a best available technology with which to address stormwater runoff. Again, the menu of BMP options is found in the regulations, and the BMPs must be designed and constructed in accordance with the *Virginia Stormwater Management Handbook, 1999.*

DEQ VPDES Municipal Separate Storm Sewer System (MS4) Permit and Industrial Permit: These permits are required for municipalities that meet certain population size criteria and for all industrial activities according to Standard Industrial Codes as published by DEQ. The permit requires a stormwater pollution prevention plan, which includes good housekeeping efforts to avoid opportunities for pollutants to enter stormwater runoff. A stormwater management plan that satisfies DCR stormwater management regulations is considered to satisfy the stormwater runoff plan requirements of the permit. A local SWM program that satisfies the stormwater management regulations satisfies the municipal program requirements.

CBLAD CBPA Regulations: The CBPA regulations are administered by local governments with oversight responsibility by CBLAD. The regulations require a no-net increase in pollutant discharge from affected areas. The areas designated for compliance are referred to as Resource Management Areas (RMAs) and Resource Protection Areas (RPAs). RMAs are designated by evaluating soil characteristics, non-tidal wetlands, steep slopes and other sensitive areas. RPAs are designated as buffers adjacent to water resources such as perennial streams and wetlands. Additional performance measures require the preservation of green space and minimization of impervious cover.

The water quality criteria and other performance standards associated with the protection of environmental resources apply to developments within the RMAs only. Many localities within Tidewater, Virginia, have designated the entire jurisdiction as a RMA rather than carve out the RMA areas by environmentally sensitive features. This allows for the implementation of the performance standards across the entire jurisdiction. Otherwise, the standards apply only in those areas designated as RMA. Development within the RPA is prohibited unless it is a water dependent facility. Limited encroachment may be allowed through an exception process for lots recorded prior to adoption.

The CBPA regulations also address redevelopment within the RMAs. Redevelopment activities that meet percent impervious cover criteria must achieve a 10 per cent reduction in phosphorus loading.

Issue Identification and Description:

A. Lack of a statewide mandate for local government comprehensive stormwater management programs that include a pro-active strategies for the prevention of nonpoint source pollution associated with urbanization

Three programs in Virginia currently address water quality associated with urban development. None of these programs, however, mandate implementation statewide. The DCR SWM program is optional for local governments; the CBLAD CBPA Regulations are required in Tidewater, Virginia, only (and even then require water quality controls only in RMAs and RPSs), and the VPDES permit only applies to localities that meet certain population criteria and industrial activities.

B. Technical and administrative guidelines for the development and implementation of regional (watershed) water quality plans

Some localities within Tidewater, Virginia, have begun to develop regional water quality plans. These plans vary with the type and rate of development. Some include forms of pollutant load trading and credits. In general, the development of the plans has varied significantly with some very questionable assumptions built into the plans. There is no formal guidance for the development of these plans to ensure effective compliance with the performance standards found in either the CBPA Regulations or the SWM Regulations. Further, the SWM Law allows for the adoption of more stringent technical criteria as long as it is developed and adopted in accordance with a watershed study. Many localities do not have the necessary in-house expertise to develop such a study nor solicit a proposal without some idea of the scope of work needed to satisfy the program requirements.

C. Use more development options that minimize the degradation of water quality

The DCR stormwater program is an "after-the-fact" standard that requires SWM BMPs for developed condition runoff. The performance standards are based on impervious cover; they encourage minimization of impervious cover by resulting in reduced requirements for reduced impacts. The CBPA regulations, on the other hand, specifically identify the minimization of impervious cover, reduced development densities and the preservation of existing vegetation and buffer areas as performance standards. These preventive ideas should be established throughout stormwater runoff programs, as well as subdivision and zoning regulations, to encourage more environmentally sensitive development practices. The general philosophy is that it is easier and more economical to maintain clean runoff than try to clean up polluted runoff.
Stormwater retention basins act as collectors of contaminants, and therefore, should be sited away from public and private drinking water supplies

D. Regulatory enforcement authority and schedule of penalties for water quality related plan requirements

Current water quality regulations that address plan requirements, specifically CBPA regulations, do not contain specific enforcement criteria for local governments to pursue violations of a plan after the initial construction and development is complete. In other words, the specific buffer preservation requirements on a plan of development prevents a developer from impacting the buffer. However, two years after the plan is complete, a homeowner may choose to clear the buffer to facilitate the drainage from his yard area or provide a clear scenic view of the adjacent water resource. Similarly, a water quality BMP required by the development of a housing subdivision may fall into disrepair or be modified by adjacent homeowners to the detriment of water quality.

E. Local government-adopted programs inconsistent with the state SWM Law and CBPA regulations' minimum standards of effectiveness

There is little in the way of program guidelines with which to establish local program consistency. Input from local governments indicates a need for a checklist of local program consistency and effectiveness similar to that of the ESC program. Evaluations of local SWM and CBPA programs indicate that the lack of resources represents a major cause of deficient programs. This trend parallels the ESC local program reviews. The legislative authority is provided by law for local governments to recover costs associated with the services provided. The shortfall appears to be the inability to adequately quantify the costs of all services rendered, and then to recover those costs from plan review and permit fees. In addition, very little effort and guidance has been provided to identify the economic benefits of an effective (appropriately funded) SWM program to the general public. Providing this type of economic data would certainly foster greater support for making effective program implementation a local priority.

F. Education of citizens, contractors, consultants, land managers, and local and state government officials on the physical and legal impacts related to the degradation of water quality

Many water quality problems can be attributed to a lack of knowledge on the part of the average citizen about their potential impact on water quality throughout their daily lives. Recent surveys on the effectiveness of urban nutrient management education programs indicate that most people want to be good stewards of the environment, however, most do not understand even the basic impacts associated with daily activities, such as walking dogs or washing their cars in driveways.

G. Management and maintenance of aging stormwater management quality BMPs

Many BMPs built for the purposes of water quality are turned over to homeowners associations for ownership and maintenance. In most cases, maintenance is not considered in the design of the basin and the homeowners association is not trained or equipped financially to perform annual and long-term maintenance. Once a stormwater BMP falls into disrepair the maintenance or repair costs can easily exceed the homeowners association's budget. In addition, the locality may not be aware of a potential BMP failure resulting in potential pollutant export.

H. Water quality criteria to address all forms of land conversion

The SWM Regulations use impervious cover as a water quality indicator and ignore managed pervious areas such as golf courses, parks, cemeteries, etc. which can contribute significant nonpoint source pollution nutrient loads.

The regulations should also specifically address impacts to ground water via Class V injection wells or filled sinkholes in karst areas.

I. Data collection and analysis of land use trends and urban nonpoint source program indicators for the purpose of supporting local program and state agency water quality initiatives

Trends in land use, development activity, disturbed acreage, water quality monitoring, and erosion control costs and efficiencies can be very effective in developing a comprehensive assessment of the statewide stormwater NPS pollution program. Data collection at the state and federal level do not typically correlate to local program support documentation. This information can be used to support immediate needs for appropriate resources and local program prioritization. Most importantly, compiling such data and returning hem to local governments in a local watershed format would enable localities to better assess and prioritize local environmental and economic trends and needs.

J. Improved coordination of resources among state agencies with responsibilities for water quality related impacts from land development and land conversion activities

DCR, DEQ and CBLAD all have a role in the land disturbing and conversion process, whether at the local or state level, or both. Various local government oversight responsibilities, as well as permit requirements, can and should be coordinated in a more effective fashion with the simple goal of more effective implementation and enforcement.

4. Nonpoint Source Pollution From More New and Failing On-Site Sewage Disposal Systems

Developing communities outside of water/sewer system accessibility are continuing to grow within the commonwealth. On-site sewage disposal systems must be installed in order to properly treat and dispose of household wastewater. Nutrients and pathogens are the common pollutants in on-site systems that can have detrimental effects on surrounding ground and surface water resources. Improperly maintained systems and failing systems have been identified as contributing significantly to nonpoint source pollutant loads, with especially high failure rates in karst areas where domestic wells are impacted.

Pending change in Sewage and Handling Disposal Regulations which take effect October 1, 1999, increase the minimum setback between drainfield trench bottom and the seasonal water table. Current permitting and inspection procedures, as set forth in the regulations, appear to be adequately addressing the placement and proper use of drainfields. Regulations are also being implemented that incorporates private sector work in the on-site disposal program. Authorized Onsite Soil Evaluators (AOSE) are now licenced by Virginia Department of Health and permitted to do site evaluations for residential development; hence, construction permits can be issued without VDH first visiting the sites. This AOSE designation also incorporate a system of accountability and qualification requirements of such individuals.

<u>NPS Pollution Control Programs</u>:

On-Site Sewage Disposal Program: The VDH regulates the construction, operation, expansion and modification of on-site sewage disposal systems. VDH also requires the timely correction of failing on-site disposal systems.

Pilot programs: DEQ has been working with local governments establishing pilot programs to provide CWSRF loans for septic rehabilitation.

Issue Identification and Description

A. Lack of statewide maintenance policies and procedures to include the inspection and pumpout of existing on-site sewage disposal systems

Existing on-site sewage disposal systems are not required to adhere to standard maintenance procedures except where local Chesapeake Bay Preservation Act ordinances are enforced. VDH has always encouraged and publicized as policy and maintenance information that all systems need to be pumped out at least every three to five years.

B. More funding mechanisms are needed for on-site systems statewide which are identified as failures

There are insufficient sources of funding for known failing systems and clustered failures are extremely expensive to repair. Neither are there sufficient funds to assist private citizens with sinkhole collapses that threaten the integrity of on-site septic systems and drinking water wells.

C. A need for mechanisms, framework and tracking systems in order to assess failing systems and actual pollutant loadings

Current mechanisms, framework and tracking systems do not adequately assess failing onsite sewage disposal systems and the related environmental impacts.

D. Statewide training initiatives developed and implemented in cooperation with local governments and community colleges

Formal educational programs do not exist for local governments, developers, homeowners, and contractors regarding the operation and maintenance needs of on-site sewage disposal systems, including the potentially harmful impacts of a failed system. VDH has been working toward developing a training center for their staff, the private sector and interested citizens. This would offer classroom instruction as well as certification and demonstration of different systems.

OBJECTIVES (SHORT-TERM GOALS)

(For additional strategies, objectives, and tasks regarding implementation of urban management measures in the coastal zone refer to Chapter XIII Coastal Nonpoint Source Pollution Control Program.)

Objective 1. By the year 2005, 85 per cent of Virginia's local government adopted ESC programs will be fully consistent with the state's minimum standards of effectiveness

Objective 2. By the year 2005, all state and federal agencies will achieve compliance rates on projects subject to Erosion and Sediment Control and Stormwater Management regulations

Objective 3. By the year 2003, establish effective, efficient and consistent enforcement of Virginia's Erosion and Sediment Control Law and Regulations

Objective 4. By the year 2001, develop a statewide tracking database/spreadsheet to incorporate VDOT, DEQ, DCR and CBLAD local program and permit tracking information regarding regulated land-disturbing activities

Objective 5. By the year 2003, ensure that state agencies responsible for resource protection related to regulated land-disturbing activities operate in an efficient and coordinated fashion through the development and implementation of an operational Memorandum Of Understanding (M.O.U.)

Objective 6. By the year 2002, develop an educational outreach program utilizing varied communication media focused on providing the general public with a basic overall understanding of nonpoint source pollution as it relates to erosion and sediment control

Objective 7. By the year 2001, investigate roadside ditch maintenance activities relative to compliance with the ESC law and address through DCR's annual plan

review of VDOT's annual plan and specifications submittal

Objective 8. By the year 2008, conservation standards shall be developed to incorporate criteria, techniques and methods for various soil types, and the physical and chemical alterations to those soils that have resulted from construction and development land use changes

Objective 9. By 2005, establish a statewide mandate for the local adoption of comprehensive SWM ordinances

Objective 10. By the year 2003, develop and adopt state wide comprehensive and effective stream channel erosion control criteria established within the regulatory framework

Objective 11. By the year 2003, all local governments and state agencies will be implementing effective development options and economic incentives for the preservation of natural stream channels and stream channel buffers

Objective 12. By the year 2005 ensure that a minimum of 85 per cent of SWM BMPs (facilities) are tracked administratively and properly maintained

Objective 13. By the year 2003, provide guidance for the permit requirements associated with the environmental
impacts of stormwater management ponds

Objective 14. By 2005, develop a comprehensive statewide mandate for the local adoption of comprehensive SWM ordinances to include water quality provisions

Objective 15. By the year 2003 develop technical and administrative guidelines for the development of watershed studies and implementation plans

Objective 16. By the year 2004 establish state wide planning and development guidelines and strategies such as "Low Impact Development" and "Innovative Site Design Techniques," which specifically minimize the impacts of development on water quality

Objective 17. By the year 2003 provide enforcement tools to ensure effective local implementation of local water quality mandates

Objective 18. By the year 2005, 85 per cent of Virginia's local government adopted SWM programs will be fully consistent with the state's minimum standards of effectiveness

Objective 19. By the year 2002, develop an educational outreach program utilizing various communication media directed at providing the general public with a basic overall understanding of nonpoint source pollution as it relates to urban activities such as lawn care, pets, household chemicals and cleaning agents, etc

Objective 20. By the year 2005 ensure that a minimum of 85 per cent of SWM BMPs (facilities) are tracked administratively and properly maintained

Objective 21. By the year 2005, establish minimum guidelines for controlling nonpoint source pollution from pervious areas

Objective 22. By the year 2001, develop a statewide tracking database/spreadsheet that incorporates DEQ, DCR and CBLAD local program and permit tracking information

Objective 23. By the year 2003, ensure that state agencies responsible for resource protection related to regulated land-disturbing activities operate in an efficient and coordinated fashion through the development and implementation of an operational Memorandum Of Understanding (M.O.U.)

Objective 24. By the year 2002, develop and implement comprehensive septic system maintenance policies and procedures for on-site sewage disposal systems

Objective 25. By the year 2005, develop mechanisms, framework and tracking systems in order to assess failing systems and actual pollutant loading

Objective 26. By the year 2003, develop and present statewide on-site sewage disposal educational

programs in cooperation with local governments

Goal 1 - Control nonpoint source pollutants related to erosion and sediment control on construction sites according to current Virginia Erosion and Sediment Control and Stormwater Management Laws and Regulations

OBJECTIVE 1			
By the year 2005, 85 per cent of Virginia's local government adopted ESC programs will be fully consistent with the state's minimum standards of effectiveness			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
1.1 Increase technical and administrative staff support to local governments for local program consistency components such as plan review, and complaint response and enforcement	•DCR •CBLAD	Ongoing	•General Fund
1.2 Provide an "Erosion and Sediment Control for Contractor's" training course for contractors working within localities that wish to develop a "cradle-to-grave" system of accountability	•DCR	2000-2001	
1.3 Develop watershed planning tools (e.g. local watershed maps depicting urbanization and NPS pollution trends, disturbed acreage, etc.) for localities in order to assist in prioritizing resource allocations and needs	•DCR •CBLAD	2001	•General Fund
1.4 Compile detailed profiles of local government-adopted ESC programs to include: 1) disturbed acreage trends by watershed; 2) number, size and complexity of private projects; 3) project compliance ratings; 4) type and number of enforcement actions taken; 5) staff resources dedicated to ESC program; 6) local program administrative costs including personnel salary and benefit ranges; 7) fees and bonds structure;8) fines and penalties structure; and 9) geographic, environmental and infrastructure complexities and limitations	•DCR •CBLAD	2001	•CZARA •319 Grant •General Fund
1.5 Integrate detailed profile information into the program evaluations in order to identify any appropriate corrective actions	•DCR	2001	

1.6 Develop economic, training and planning "tools" available to local governments in order to foster more efficient program implementation to ensure that staff resources do not have to continually increase in a linear relationship to population growth	•DCR •CBLAD	2002	•General Fund •WQIF •319 Grant

OBJECTIVE 1 (cont.)			
By the year 2005, 85 per cent of Virginia's local government adopted ESC programs will be fully consistent with the state's minimum standards of effectiveness			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
1.7 Develop new and demonstrate existing economic incentives for program consistency	DCR	2002	•Grant Funds
1.8 Compile local program data that identifies both the environmental and economic costs of non-compliance to properties being developed, as well as adjacent properties	•DCR •CBLAD	2002	
1.9 Continue to provide basic to advanced levels of training for local governments to include empowering local governments to conduct their own training	•DCR	Ongoing	•General Fund
1.10 Develop and maintain an "Urban Nonpoint Source Pollution Hotline," by which citizens can report alleged violations or nonpoint sources of pollution	•DCR •DEQ •CBLAD	2000	
1.11 Support watershed planning with special studies to document groundwater flow paths and stormwater management techniques in karst areas. Develop appropriate guidelines for investigation, modeling/testing and design of Class V injection wells. Disseminate information to communities and counties, planning districts, SWCDs, agencies and contractors	•DCR	2003	

OBJECTIVE 2			
By the year 2005, all state and federal agencies will achieve compliance rates on projects subject to Erosion and Sediment Control and Stormwater Management regulations			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
2.1 Require submittal of state agency ESC plans to DCR and CBLAD for a coordinated ESC/CBPA review of qualifying projects (> 2,500 sq.ft.) within Chesapeake Bay Resource Management Areas	•DCR •CBLAD	2000	
2.2 Provide basic to advanced levels of training as appropriate for state agency personnel assigned to duties related to the plan review, inspection and enforcement components of the state's ESC program; state agencies will be required to demonstrate that plan review, inspection and enforcement responsibilities are executed by personnel who meet training and certification requirements similar to that of local program personnel	•DCR	2001	•General Fund
2.3 Promote the requirement within the Capital Outlay Process for contractors bidding on regulated state projects to complete the "Contractor Training Course" (This requirement would help state agencies set a lead example in a "cradle-to-grave" system of accountability for local governments to follow)	•DCR	2001	
2.4 Develop and provide basic to advanced levels of training that encompass the complex nature of roadway, utility and other linear projects	•DCR	2002	•General Fund
2.5 Develop new and more efficient inspection, plan development, plan review and enforcement tools to ensure that DCR and state agency ESC staff resources do not have to continually increase in a linear relationship to the number of state agency projects and/or population growth trends	•DCR	2002	•General Fund •319 Grant •WQIF
2.6 Establish an ESC compliance evaluation system for state agencies to track disturbed acreage data by watershed basin, project start and completion dates, estimated percent completion on long term projects and compliance ratings throughout the life of projects in order to develop priorities for improving ESC implementation	•DCR	2002	•CZARA
2.7 Correlate the compliance evaluation system data from strategy 2.6 into a formula for estimating environmental and economic impacts to state agencies, and the state's land and water resources	•DCR	2003	
2.8 Where appropriate, DCR will ensure federal consistency review of federal projects	•DCR	Ongoing	

OBJECTIVE 3			
By the year 2003, establish effective, efficient and consistent enforcement of Virginia's Erosion and Sediment Control Law and Regulations			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
3.1 Develop a reporting and tracking database of statewide enforcement and abatement case histories in order to continually update enforcement and abatement guidance	•DCR	2001	•General Fund •CZARA
3.2 Develop comprehensive compliance/enforcement guidelines that establish minimum standards of due process for enforcement actions and the assessment of fines and penalties to be utilized by program authorities as designated by the ESC law	•DCR	2001	•General Fund
3.3 Develop comprehensive technical guidelines and potential costs for the abatement of damages resulting from non-compliance with the Erosion and Sediment Control Law and Regulations	•DCR	2002	•General Fund •CZARA
3.4 Provide local governments, state agencies, citizens and legal community with education and technical training on federal, state and local requirements of the erosion and sediment control statutes, the adverse impacts of construction related damages to land and water resources, and the methodologies and potential costs for the abatement of these damages	•DCR •CBLAD •DEQ	2002	•General Fund
3.5 Develop and maintain an "Erosion and Sediment Control Activity Hotline" through which concerned citizens can report alleged violations	•DCR	2001	•WQIF •319 Grant •General Fund

OBJECTIVE 4			
By the year 2001, develop a statewide tracking database/spreadsheet to incorporate VDOT, DEQ, DCR and CBLAD local program and permit tracking information regarding regulated land-disturbing activities			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
4.1 Establish a protocol among the appropriate state agencies for nonpoint source pollution data collection, documentation and reporting, to include the facilitation of local government access, data update procedures and presentation formats	•DCR •CBLAD •DEQ •VDOT	2001	•CZARA
4.2 Develop a locality specific executable database (compatible with the statewide tracking system) for input of local government urbanization trends and environmental conditions; provide for the electronic transfer of the locality specific database to a central database on a quarterly basis for assimilation into statewide data and redistribution to localities to assist in depicting large (tributary) watershed urbanization trends	•DCR •CBLAD •DEQ •VDOT	2001	•WQIF •CZARA •319 Grant •General Fund
4.3 Dedicate staff within each agency to compose an interagency workgroup to monitor and update data reporting	•DCR •CBLAD •DEQ •VDOT	2001	

OBJECTIVE 5			
By the year 2003, ensure that state agencies responsible for resource protection related to regulated land-disturbing activities operate in an efficient and coordinated fashion through the development and implementation of an operational Memorandum Of Understanding (M.O.U.)			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
5.1 Dedicate DCR, CBLAD and DEQ staff to work on an interagency workgroup to identify operational overlap of agency roles and responsibilities	•DCR •DEQ •CBLAD	2001	
5.2 Through the work group established in the strategy 5.1, identify the agency with primary responsibilities regarding each specific program area in order to consolidate and streamline state agency services	•DCR •DEQ •CBLAD	2002	
5.3 Incorporate the findings of the previous strategies into an operational M.O.U.	•DCR •DEQ •CBLAD	2003	

OBJECTIVE 6			
By the year 2002, develop an educational outreach program utilizing varied communication media focused on providing the general public with a basic overall understanding of nonpoint source pollution as it relates to erosion and sediment control			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
6.1 Develop and present "Urban Nonpoint Source Pollution" courses for citizens across the commonwealth to include basic information regarding the state ESC program	•DCR	2001	•WQIF •319 Grant
6.2 Develop and maintain an interactive web site that allows all stakeholders to access watershed, regional and statewide information specific to ESC program implementation and related links	•DCR	2001	•General Fund •WQIF •319 Grant •NOAA
6.3 Develop an integrated state agency-local government nonpoint source pollution response network that effectively crosses program boundaries to identify jurisdictional responsibilities, minimizes transfer of responsibility and directs citizenry to state agency points-of-contact with primary/lead responsibilities	•DCR •CBLAD •DEQ •VDH •VDOT •CBF	2001	
6.4 Develop a brochure on ESC in karst areas for local officials and contractors. Develop a second brochure on ESC near sensitive aquatic habitats and natural areas.	•DCR	2000-2001	•319 Grant •VDOT

OBJECTIVE 7			
By the year 2001, investigate roadside ditch maintenance activities relative to compliance with the ESC law and address through DCR's annual plan review of VDOT's annual plan and specifications submittal			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
7.1 VDOT will conduct ESC inspections and review the inspection results of roadside ditch maintenance activities to include percent stabilization, actual time taken to establish permanently stabilized roadside ditches and a report of these findings to DCR	•VDOT •DCR	2000	
7.2 DCR and VDOT will evaluate roadside ditch ESC maintenance procedures to include randomly inspecting a portion of local and state agency ditch cleaning projects annually	•DCR •VDOT	2000	
7.3 DCR and VDOT will continue to work cooperatively on ESC staff and contractor certification programs. In addition, DCR and VDOT will review findings of statewide inspection results. If inspection results reveal significant erosion and sedimentation impacts, DCR and VDOT will take necessary steps to work to address ditch cleaning operations	•DCR	2001	
7.4 DCR will continue to work with the VDOT Districts on hydrogeologic issues in karst terrain, and will continue to cooperate in the protection of sensitive natural areas and ecological communities.	•DCR •VDOT	2000-2004	•319 Grant

OBJECTIVE 8			
By the year 2008, conservation standards shall be developed to incorporate criteria, techniques and methods for various soil types, and the physical and chemical alterations to those soils that have resulted from construction and development land use changes			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
8.1 DCR will solicit and compile up-to-date changes and improvements in internationally recognized engineering technologies and practices for the effective control of soil erosion, sediment deposition and surface runoff, and incorporate this information into an updated Erosion and Sediment Control Handbook	•DCR	2002	•General Fund •319 Grant •WQIF
8.2 Develop an interagency task force to investigate the accuracy of current baseline soils' engineering properties and data regarding altered land surfaces and the resulting physical and chemical changes that occur to natural soil conditions, and surface and groundwater hydrology (existing soil survey baseline data is derived from agricultural land use plots and is therefore not representative of construction site project information from commencement of construction activity throughout final developed site conditions)	•NRCS •DCR •VDOT •CBLAD	2002	
8.3 Incorporate the findings from strategy 8.2 into a plan to perform engineering soil surveys on construction and development projects representing the wide variety of soils throughout Virginia. The performance of such surveys should provide increased accuracy of engineering calculations and the related efficiencies and effectiveness of conservation standards and practices developed to minimize the on-site and off-site environmental and economic impacts of construction and development	•NRCS •DCR	2005	•319 Grant •WQIF
8.4 Accelerate current schedule of soil surveys and soil survey updates to include data derived from developed soil conditions in all Virginia counties. Counties which have been awaiting the compilation and publication of final surveys and/or have never been surveyed should take first priority. Rapidly urbanizing counties should then be prioritized to include developed soil conditions data	•NRCS •DCR •CBLAD	2005	•319 Grant •WQIF
8.5 Incorporate findings and developed soil survey data information to include appropriate revised conservation standards to reflect more accurately calculated efficiencies and effectiveness into an updated Erosion and Sediment Control Handbook	•DCR	2008	•General Fund •319 Grant •WQIF

Goal 2 - Adequately address nonpoint source pollutants related to stream channel erosion due to increased volume and rates of flow resulting from increased impervious cover

OBJECTIVE 9			
By 2005, establish a statewide mandate for the local adoption of comprehensive SWM ordinances			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
9.1 Integrate DCR's ESC and SWM program services to implement more effective and efficient local government program and state agency oversight as well as technical program implementation	•DCR	2001	
9.2 Correlate development and land use statistical data with water quality reports, property damage reports, citizen complaints, and other evidence of water quality degradation, stream channel erosion, localized flooding and other areas of local program needs for the purposes of reporting to the Virginia General Assembly on the need for amendments to the ESC and SWM laws. The recommended language of these amendments may identify the need for integrated local ESC and SWM ordinances that address all of the components of stormwater management, including the water quality issues associated with construction activities, stream channel erosion and nonpoint source pollution associated with land development and land conversion activities, localized flooding and maintenance of temporary and permanent erosion control and stormwater facilities	•DCR	2001	
9.3 Increase technical staff support to local governments to assist in the required integration of ESC and SWM programs for local program consistency components such as plan review, and complaint response and enforcement	•DCR •CBLAD	2002	
9.4 Identify and provide financial resource to local governments to aid in the development and implementation of stormwater management programs	•DCR •CBLAD •DEQ •PDCs •SWCDs	2004	•To be deter-mined

OBJECTIVE 10			
By the year 2003, develop and adopt state wide comprehensive and effective stream channel erosion control criteria established within the regulatory framework			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
10.1 Establish an interagency workgroup representing the physiographic regions of the state to develop amendments to the stream channel erosion control component of the ESC and SWM Regulations. These amendments are to include engineering principles to support the relationship between low impact development practices that encourage infiltration (groundwater recharge) and reductions in stormwater discharge, as well as the preservation of natural stream channel characteristics and buffers	•DCR •CBLAD •DEQ •PDCs	2000	
10.2 Publish a Notice of Intended Regulatory Action and convene an ad-hoc committee for the purposes of drafting amendments to the ESC and SWM regulations in coordination with the recommendations of the interagency workgroup established in strategy 10.1	•DCR	2001	
10.3 Increase technical staff support to local governments to assist in the implementation of the comprehensive stream channel erosion regulations	•DCR •CBLAD	2001	•General Fund
10.4 Develop a technical training program to educate local government and state agency officials about the implementation of the amended stream channel erosion control criteria	•DCR •CBLAD	2001	•General Fund •WQIF
10.5 Provide advanced technical stream channel protection training within the ESC Training and Certification Program	•DCR	2001	•General Fund

OBJECTIVE 11			
By the year 2003, all local governments and state agencies will be implementing effective development options and economic incentives for the preservation of natural stream channels and stream channel buffers			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
11.1 Provide education for citizens, contractors, consultants, land managers, and local and state government officials on the physical, legal, and economic impacts related to the degradation of drainage and stream channel systems	•DCR	2001	
11.2 Demonstrate existing and develop new economic incentives for local government implementation of a comprehensive SWM program. Incorporate economic incentives into the local site development process for developers to satisfy preventive and minimization goals of stream channel degradation	•DCR •DEQ •CBLAD	2002	•CZARA
11.3 Compile local program data that identifies both the environmental and economic costs of the lack of comprehensive stormwater management to both properties being developed and adjacent properties, and the combined effect on regional land and water resources	•DCR •CBLAD	2001	
11.4 Provide basic and advanced levels of training about stream channel erosion criteria for local government and state ESC/SWM program personnel	•DCR •CBLAD	2001	•General Fund
11.5 Develop watershed planning tools (e.g. local watershed maps depicting urbanization and NPS pollution trends, disturbed acreage, etc.) for localities to assist in prioritizing resource allocations and needs	•DCR	2002	•General Fund
11.6 Develop economic, training and planning "tools" and make available to local governments to foster more efficient program implementation to ensure that staff resources do not have to continually increase in a linear relationship to population growth	•DCR •CBLAD	2002	•General Fund •WQIF •319 Grant

OBJECTIVE 12			
By the year 2005 ensure that a minimum of 85 per cent of SWM BMPs (facilities) are tracked administratively and properly maintained			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
12.1 Provide better maintenance related design guidance and education for localities and landowners with BMPs	•DCR	2001	
12.2 Develop enabling authority and guidance for BMPs maintenance bonds	•DCR •CBLAD	2001	
12.3 Develop guidance and samples of maintenance agreements	•DCR •CBLAD	2001	
12.4 Provide financial and technical assistance for local government inventory of SWM BMPs	•DCR •CBLAD	2002	
12.5 Develop and maintain SWM BMPs tracking system for local governments and state agencies	•DCR	2002	

OBJECTIVE 13			
By the year 2003, provide guidance for the permit requirements associated with the environmental impacts of stormwater management ponds			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
13.1 Establish a workgroup composed of federal (EPA, COE), state (DCR, DEQ, CBLAD, VIMS) and local officials and consultants to develop permit guidance	•DCR •DEQ •CBLAD •DGIF •EPA •ACE	2001	
13.2 Formally adopt permit guidance language to guide the implementation of regional stormwater basins in accordance with environmental preservation regulations	•DCR	2003	

Goal 3 - Adequately address nonpoint source pollutants related to new and existing developed surfaces

OBJECTIVE 14			
By 2005, develop a comprehensive statewide mandate for the local adoption of comprehensive SWM ordinances to include water quality provisions			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
14.1 Integrate DCR's ESC and SWM program services to implement more effective and efficient local government program and state agency oversight as well as technical program implementation	•DCR	2001	
14.2 Correlate development and land use statistical data with water quality reports, property damage reports, citizen complaints, and other evidence of water quality degradation, stream channel erosion, localized flooding, and other areas of local program needs for the purposes of reporting to the Virginia General Assembly on the need for amendments to the ESC and SWM laws. The recommended language of these amendments may identify the need for integrated local ESC and SWM ordinances that address all of the components of stormwater management, including the water quality issues associated with construction activities, stream channel erosion and nonpoint source pollution associated with land development and land conversion activities, localized flooding and maintenance of temporary and permanent erosion control and stormwater facilities	•DCR	2002	
14.3 Increase technical staff support to local governments to assist in the required integration of ESC and SWM programs for local program consistency components such as plan review, and complaint response and enforcement	•DCR •CBLAD	2002	
14.4 Amend CBLAD designation and management regulations, as proposed, to be consistent with DCR stormwater management water quality provisions. Provide technical and performance based standards promulgated by DCR in the context of CBPA compliance	•CBLAD	2000	

OBJECTIVE 15			
By the year 2003 develop technical and administrative guidelines for the development of watershed studies and implementation plans			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
15.1 Establish an interagency workgroup to include DCR, DEQ, CBLAD and US Army Corps of Engineers officials for the purposes of drafting minimum guidelines for the development of regional watershed studies and implementation plans, which satisfy state and federal agency requirements	•DCR •DEQ •CBLAD •COE •PDCs	2001	
15.2 Establish areas of additional research needed to verify groundwater impacts associated with the channelization of stormwater runoff and potential contamination associated with infiltration type stormwater BMPS	•DCR •DEQ •CBLAD	2001	
OBJECTIVE 16			
By the year 2004 establish state wide planning and development guidelines and strategies such as "Low Impact Development" and "Innovative Site Design Techniques," which specifically minimize the impacts of development on water quality			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
16.1 Establish a study group consisting of land planning, zoning, public works, and any other necessary component of the land development process to establish alternative (preventive) standards for development requirements related to road widths, parking requirements, cluster development, and other criteria related to impervious cover. The goal of this process shall be to incorporate these alternative development criterion into local zoning, subdivision and development requirements	•DCR •CBLAD •PDCs	2001	
16.2 Provide site planning assistance and education to developers, consultants and public officials to implement the use of pro-active land use practices that minimize water quality impairments	•CBLAD •DCR	2001	
16.3 Provide training and education to local planning and public works officials to reduce the practical conflict between public works, planning and environmental preservation objectives	•CBLAD •DCR	2002	

OBJECTIVE 17			
By the year 2003 provide enforcement tools to ensure effective local implementation of local water quality mandates			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
17.1 Develop a reporting and tracking system of statewide enforcement and abatement case histories relating to water quality impairments into a database to continually update enforcement and abatement guidance	•DCR •CBLAD •DEQ	2001	•CZARA
17.2 Develop comprehensive Compliance/Enforcement Guidelines which establish minimum standards of due process for enforcement actions and the assessment of fines and penalties to be utilized by the program authority as designated by the SWM Law and Chesapeake Bay Preservation Act	•DCR •CBLAD •DEQ	2001	
17.3 Develop comprehensive technical guidelines and potential costs for the abatement of damages resulting from non-compliance with the SWM Law and CBPA	•DCR •CBLAD •DEQ	2002	
17.4 Provide local governments, state agencies, citizens and legal community with education and technical training on federal, state and local requirements of the stormwater quality statutes, the adverse impacts of development related water quality impairments, and methodologies and potential costs for the abatement of resulting damages	•DCR •CBLAD •DEQ	2002	

OBJECTIVE 18			
By the year 2005, 85 per cent of Virginia's local government adopted SWM programs will be fully consistent with the state's minimum standards of effectiveness			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
18.1 Increase technical staff support to local governments for local program consistency components such as plan review, and complaint response and enforcement	•DCR •CBLAD	2001	
18.2 Provide basic to advanced levels of training for local government and state ESC program personnel	•DCR	2001	
18.3 Develop new and demonstrate existing economic incentives for program consistency	•DCR •DEQ •CBLAD	2001	•CZARA
18.4 Develop watershed planning tools (e.g. local watershed maps depicting urbanization and NPS pollution trends, disturbed acreage, etc.) for localities to assist in prioritizing resource allocations and needs	•DCR •CBLAD	2001	•CZARA
18.5 Compile local program data that identifies both the environmental and economic costs of non-compliance to both properties being developed and adjacent properties	•DCR	2002	
18.6 Develop economic, training and planning "tools" and make available to local governments to foster more efficient program implementation to ensure that staff resources do not have to continually increase in a linear relationship to population growth	•DCR •CBLAD	2002	
18.7 Develop guidance for forecasting the costs of effectively implementing all of the components of a local SWM program	•DCR	2002	•CZARA

OBJECTIVE 19			
By the year 2002, develop an educational outreach program utilizing a variety of communication media directed at providing the general public with a basic overall understanding of nonpoint source pollution as it relates to urban activities such as lawn care, pets, household chemicals and cleaning agents, etc			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
19.1 Develop and present "Urban Nonpoint Source Pollution" courses for citizens across the commonwealth that include the environmental and economic benefits of the ESC program to both on-site and off-site resources and properties	•DCR	2001	•WQIF •319 Grant
19.2 Develop and maintain an interactive web site that allows all stakeholders to access watershed, regional and statewide information specific to urban nonpoint source pollution program implementation and related links	•DCR •CBLAD •DEQ	2001	
19.3 Develop an integrated state agency-local government nonpoint source pollution response network that effectively crosses program boundaries to identify jurisdictional responsibilities, minimizes transfer of responsibility and directs interested parties to state agency points-of-contact with primary/lead responsibilities	•DCR •CBLAD •DEQ •VDH •VDOT •CBF	2001	
19.4 Conduct training and education seminars for local citizens and land management officials on the legislative requirements of water quality programs, technical requirements for development projects and good housekeeping procedures to minimize impacts to water quality	•DCR •CBLAD •DEQ	2001	

OBJECTIVE 20			
By the year 2005 ensure that a minimum of 85 per cent of SWM BMPs (facilities) are tracked administratively and properly maintained			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
20.1 Provide better maintenance related design and siting guidance and education for localities and landowners with BMPs	•DCR	2001	
20.2 Develop enabling authority and guidance for BMPs maintenance bonds	•DCR	2001	
20.3 Develop and maintain SWM BMPs tracking system for local governments and state agencies	•DCR •CBLAD	2002	
20.4 Develop guidance and samples of maintenance agreements	•DCR	2001	
20.5 Provide financial and technical assistance for local government inventory of SWM BMPs	•DCR •CBLAD	2002	

OBJECTIVE 21			
By the year 2005, establish minimum guidelines for controlling nonpoint source pollution from pervious areas			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
21.1 Establish an interagency task force to develop a technical policy for addressing runoff water quality from managed pervious areas such as golf courses, parks, cemeteries, etc.	•DCR •CBLAD •DEQ	2001	
21.2 Develop legislation to require that fertilizers marketed for non-agricultural uses on residential and commercial property contain adequate directions for use which explains: (1) that nutrient runoff is detrimental to surface and ground water quality; (2) application rate recommendations; (3) the need to apply fertilizers only at seasonal times when plants are capable of active growth; and (4) that no spillage or application should occur on impervious surfaces such as roads and driveways	•DCR	2001	
21.3 Contact 20 local franchises annually of major lawn service companies and seek signed water quality agreements in which firms meet DCR standards	•DCR	Ongoing	
21.4 Develop pilot nutrient management plan format for golf courses	•DCR	2001	
21.5 Develop 20 site-specific golf course nutrient management plans	•DCR	2005	
21.6 Estimate the use of nitrogen containing deicers in Virginia and potential water quality impacts, determine the availability of non-polluting substitutes and evaluate the need for state strategies to limit their use on impervious surfaces	•DCR •VDOT	2003	
21.7 Develop a voluntary "Urban Nutrient Management Training Program" for local governments, state agencies, recreational land managers, landscape superintendents, developers, and property owners who have responsibilities for establishing and maintaining open spaces	•DCR •VDOT •DEQ	2003	•WQIF
21.8 Establish an inter-agency study committee to evaluate the stormwater impacts of nursery operations and the authority to address concerns under existing laws and regulations	•DCR •CBLAD •VDACS	2001	

OBJECTIVE 22			
By the year 2001, develop a statewide tracking database/spreadsheet that incorporates DEQ, DCR and CBLAD local program and permit tracking information			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
22.1 Establish a protocol among the appropriate state agencies for NPS pollution data collection, documentation and reporting to include the facilitation of local government access, data update procedures and presentation formats	•DCR •CBLAD •DEQ •VDOT	2001	
22.2 Develop a locality specific executable database (compatible with the statewide tracking system) for local governments to input existing urbanization trends and environmental conditions. Provide for the electronic transfer of the locality specific database to a central database on a quarterly basis for assimilation into statewide data and redistribution back to localities to assist in depicting large (tributary) watershed urbanization trends	•DCR •CBLAD •DEQ •VDOT	2001	•WQIF •319 Grant •CZARA •General
22.3 Dedicate staff within each agency to serve on an interagency workgroup that monitors and updates data reporting	•DCR •CBLAD •DEQ •VDOT	2001	

OBJECTIVE 23			
By the year 2003, ensure that state agencies responsible for resource protection related to regulated land-disturbing activities operate in an efficient and coordinated fashion through the development and implementation of an operational Memorandum Of Understanding (M.O.U.)			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
23.1 Dedicate DCR, CBLAD and DEQ staff to work on an interagency workgroup to identify operational overlap of agency roles and responsibilities	•DCR •DEQ •CBLAD	2001	
23.2 Through the work group established in the strategy 23.1, identify the agency with primary responsibilities regarding each specific program areas to consolidate and streamline state agency services	•DCR •DEQ •CBLAD	2002	

23.3 Incorporate the findings of the previous strategies into an operational M.O.U.	•DCR	2003	

Goal 4 - Adequately address nonpoint source pollutants related to new and failing on-site sewage disposal systems

OBJECTIVE 24			
By the year 2002, develop and implement comprehensive septic system maintenance policies and procedures for on-site sewage disposal systems			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
24.1 Pumpout and maintenance policies and procedures will be developed to ensure that systems are operating and being maintained	•VDH	2002	
24.2 Comprehensive planning tools will be developed for the treatment, disposal and reuse potential of septage	•VDH •Local Govern-ments	2002	
24.3 Specialized inspection policies and procedures will be developed to ensure that the integrity and operation of advanced and complex systems are thoroughly evaluated	•VDH	2002	
24.4 Elements of an on-site system management program will be developed for advanced on-site systems maintenance	•VDH	2002	
24.5 Continue to support demonstrations of innovative water quality septic system designs	•VDH •DEQ •Private business	Ongoing	

OBJECTIVE 25			
By the year 2005, develop mechanisms, framework and tracking systems in order to assess failing systems and actual pollutant loading			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
25.1 Provide mechanisms, framework and tracking systems in order to find solutions for failing systems	•VDH	2005	
25.2 Implement solutions for prioritized failing areas through the assessment of actual and potential pollutant loadings	•VDH •DEQ •DCR •CBLAD	2002	
25.3 Identify and implement a cooperative state agency approach for addressing waterborne pathogens	•VDH •DCR •CBLAD •DEQ	2002	
25.4 Continue working with local governments to establish pilot programs to provide loans for septic rehabilitation	•DEQ •Local govern-ments	Ongoing	CWSRF
OBJECTIVE 26			
By the year 2003, develop and present statewide on-site sewage disposal educational programs in cooperation with local governments			
STRATEGIES & RELATED TASKS	**AGENCIES & OTHERS**	**TARGET YEAR**	**FUNDING SOURCES**
26.1 VDH, CBLAD, DCR and DEQ will develop an interagency work group to develop the content of joint statewide educational programs	•VDH •CBLAD •DCR •DEQ	2001	
26.2 Interagency workgroup established in 27.1 will identify watersheds with priority pollutant concerns in order to prioritize initial educational efforts	•DCR •CBLAD •DEQ •VDH	2001	
26.3 Educational programs will be developed and presented to local governments, developers, homeowners associations, contractors and citizens regarding the relationships between sustainable development and on-site waste disposal systems	•VDH •CBLAD •DEQ •DCR	2003	

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